How Small Arms Capabilities Shape Decisions at Battalion and Brigade Level

Compiled by Daniel Evans and John Willis

On 27 September 2012, West Point's Small Arms Technology Team interviewed COL Denton Knapp via phone from Bagram Airbase in Afghanistan and COL Jeffrey Peterson in person. Later the team held a teleconference with LTC(R) Robert Estey and LTC Bart Kemper.

The focus of the conversations focused on criteria to measure small arms effectiveness, desired small arms capabilities, perceptions of current US Small Arms by US soldiers, and driving forces or deep trends that will have a major influence on Small Arms over the next 30 years. The insights and themes from the interviews and teleconference will be discussed in this summary:

Proposed Criteria Framework: Rob Estey had prepared a proposed list and it was commented on and modified based on Bart Kemper's input.

1) Range or stand-off
2) Precision
3) Knock-down capability
4) Rate of fire
5) Penetration (body armor or defensive position)
6) Ease of use (training requirements)
7) Day to night transition
8) Safety
9) Reliability/ruggedness
10) Portability
11) Flexibility (related to ammo)
12) Logistics tail

Multi-functional Weapons. All participants mentioned a desire to quickly "switch" a weapons capability. One participant mentioned "dial an effect." The ability to quickly switch from lethal to non-lethal capability as well as the ability to switch from day to night functionality was mentioned numerous times. The ability to have a single weapon platform that can perform all necessary functions was discussed as a desired future capability. "On the fly" task organization is common so the ability to modify weapons' capabilities (e.g., offering a suite of ammunition choices) is vital.

Simplicity. It was mentioned that future weapons need to be simplified. A majority of today's soldiers don't have prior experience with weapons or marksmanship. We need the capability for a soldier to be able to pick up a weapon and hit the target they're aiming at. In order to improve accuracy and target acquisition, we have made small arms weapons systems very

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
27 SEP 2012	**N/A**	**-**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
How Small Arms Capabilities Shape Decisions at Battalion and Brigade Level	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
Dan Evans, John Willis	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)	8. PERFORMING ORGANIZATION REPORT NUMBER
US Military Academy, Network Science Center, West Point, NY 10996	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release, distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

On 27 September 2012, West Points Small Arms Technology Team interviewed a group of current and former battalion and brigade commanders. The focus of the conversations focused on criteria to measure small arms effectiveness, desired small arms capabilities, perceptions of current US Small Arms by US Soldiers, and driving forces or deep trends that will have a major influence on Small Arms over the next 30 years.

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**UU**	**4**	

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18

complicated. The various "add-ons" now require extensive training (discussed later in this summary) and small unit experts such as Small Arms Master Gunners. It's very hard to become an expert with today's small arms weapons. The capability to "quick zero" and rapid boresighting was identified as a need.

"User Interface." An analogy discussed was that a user of an iPhone3 could pick up an iPhone5 and intuitively be able to use it. For example the M-4, M-249, and the M-240B are all very different mechanical and the way that the user operates it. A soldier who is proficient with the M-4 might have challenges operating an M-249 if the situation required it. For instance, the loading and clearing of these weapons requires dissimilar processes. Also discussed was the wide variety of holsters (chest, hip, leg, etc.) in use by soldiers in the field is one indicator revealing the prevalence of customization of small arms by individual soldiers.

Maintenance. Current weapons are very difficult to maintain. Currently issued cleaning kits are ineffective and soldiers end up purchasing dental tools on their own in order to maintain weapon. A future weapon should have all capabilities discussed, be simple, and almost "disposable." The iPhone analogy was repeatedly used as an example.

"Live with your weapon." There was a general consensus that soldiers need to carry their weapons more when not deployed. Police carry loaded weapons all of the time but the military locks them up in the Arms Room and then makes a "big deal" about them when they are signed out to soldiers. This causes soldiers to be unfamiliar with the weapon and its characteristics and, many times afraid of their weapon. In order to implement this change, the Department of Defense would have to dramatically change its view on the amount of risk and bad "Public Relations" that will eventually result from such a change in policy. Policies driven by risk aversion to avoid a negligent discharge of a weapon have outweighed the benefits of weapon familiarity.

Are there current or emerging technologies that you think the Army should consider exploiting as it moves into the future?

1) **Small Arms vs M-1 Tank.** In an M-1, the gunner puts the sight on the target and the system makes all necessary adjustments to ensure that the first round hits the target. Why can't small arms weapons have a similar capability?

2) **Gun Cameras and Unmanned Target Acquisition.** An upgrade to current optics and, let soldiers control with video game-type controller on weapon. Most soldiers are already very proficient with this type of "human factors" set up. Unmanned aerial systems (e.g., Switchblade) allow non-line-of-sight and beyond-line-of-sight targets to be detected, tracked, and

engaged at stand-off ranges.

3) **Range Determination.** Every golfer has a cheap "disposable" range finder-let's integrate into weapons' optics.

4) **Indirect Fire Capability.** General agreement that the ability to fire a "loitering" round that can be directed at target by soldier.

5) **We're still using a lot of "old technology."** Why are will still using a nail to zero a weapon? Magazines design haven't changed much in over 50 years. Wear out and hard to maintain. Other technology discussed included disposable magazines with caseless ammo, gas vs. powder propellants, directed energy weapons, and rail guns.

Training Issues. There was a general consensus that the operating environment (which will likely not change) presents training challenges. Couple this with weapons that are continually becoming more complicated and commanders have a huge training challenge. Training range availability and the allocation of time and resources to small arms training tasks is often lacking. Soldiers now have to be proficient and confident at close quarters and quick draw engagements (actually probably always needed to be) while remaining proficient at longer-range engagements. Units also require numerous experts in order to ensure that training is effective and "to standard." This challenge led directly to the "simplicity" discussion earlier in this summary.

How do your Soldiers view their small arms? How do these views affect the way Soldiers fight?

Most of the participants agreed that this is really a training issue that will instill confidence. The average soldier doesn't know enough about small arms and marksmanship to effectively compare different weapons capabilities. It was agreed that poor training leads to less directed fire and therefore, more volume of fire, which results in collateral damage, friendly fire incidents, etc.

Is there a perception that the Army is falling behind current and potential adversaries?

The participants agreed that trade offs are commonly known. For instance, they stated that soldiers realize that the AK family of weapons is reliable, produces a large volume of fire at higher caliber, but the AK is less accurate. They also said that soldiers are always going to be envious of new "cool" weapons that Special Operators or contractors might field but that in most cases, these weapons are not appropriate for the type of mission conducted by "regular" US units.

Driving Trends:

One interesting comment was the second order medical effects of our “100 lbs of light gear.” Units are already seeing soldiers with multiple deployments who are experiencing chronic health issues. Adding another capability that only weighs a little to a current weapons only adds to this issue. This effect will great impact the VA Health System for years.

Related to this comment was an analogy to tanks and capabilities during WW2. To summarize, the Germans created the best and most heavily armored main battle tanks. The Soviets and the US produced large quantities of inferior tanks that were able to move quickly and swarm. They would sacrifice some tanks but they would be able to quickly “swarm” and overwhelm the less agile German tanks. Some participants agreed that we are currently similar to the German Army in regards to our soldiers. They have the best lightweight equipment and weapons available but because of mobility limitations can easily be “swarmed” by a less risk-averse, more agile opposition.

It was generally agreed that for the foreseeable future that small units will be operating in a constrained environment/restricted terrain and that there will continue to be the presence of civilians on the battlefield. The participants agreed that there is a risk in making such an assumption and that we need to be prepared for more traditional “open warfare” as well. It was generally agreed that small arms capabilities should be the same for both types of "battlefields."

One other discussion was a concern about relying too much on technology because there are many “low-tech” methods to combat this reliance. For instance, in Afghanistan, some insurgents were able to jam JDAM munitions during the final part of their flight to negate the last adjustments that round was making as it was in-bound to the target. Other possible examples might be the ability to jam small arms weapons rounds that are electronically controlled during their flight. Another example of “low-tech” counter measure would be the employment of cheap thermal blankets in order to confuse/disguise enemy positions.